COMMERCE TEXAS PROPERTIES INC. 2490 FM 685, HUTTO, TX 78634

CITY OF PFLUGERVILLE

DEVELOPMENT SERVICES CENTER HALFF ASSOCIATES, INC 201-B EAST PECAN ST. 9500 AMBERGLEN BLVD PFLUGERVILLE, TEXAS 78660 **BUILDING F SUITE 125** (512) 990-6300 **AUSTIN, TEXAS 78729**

UTILITY PROVIDERS

CITY OF PFLUGERVILLE - (512) 990-6100 CITY OF PFLUGERVILLE - (512) 990-6100

CIVIL ENGINEER

ONCOR ELECTRIC - (888) 313-6862 ATMOS ENERGY - (888) 286-6700

GRID COORDINAT

CP/BM5000	10127704.08	3159571.85 655.14	MAG NAIL IN CURB
CP/BM5001	10126441.18	3157834.22 636.64	X CUT IN CONC
CP-5 (CITY OF PFLUGERVILLE)	10127779.63	3159382.66 656.45 (TOP OF MON)	IRON ROD IN CONC
SURFACE COORDINATES			
	NORTHING	EASTING ELEV.	TYPE

3158150.00 636.64

NORTHING EASTING ELEV.

CP-5 (CITY OF PFLUGERVILLE)

THE EXISTING SITE CONSISTS OF A VACANT LOT AT THE EDGE OF THE CITY LIMITS. THERE IS NO BUILDING OR SITE DEVELOPMENT PROPOSED AT THIS

THE FULL EXTENSION OF HELIOS WAY AS DEPICTED IN THIS PRELIMINARY PLAN

10127453.82

10128792 40

FUTURE DEVELOPMENT IS ANTICIPATED TO BE BELOW THE 2 000 VEHICLE TRIPS/DAY THRESHOLD FOR REQUIRING A TRAFFIC IMPACT ANALYSIS (TIA). A TRIP GENERATION CALCULATION LETTER VERIFYING THIS. PERFORMED BY ALEX REYNA. PE. PTOE. OF HALFF ASSOCIATES. INC., DATED JULY 6, 2021, HAS BEEN PROVIDED TO THE CITY.

3159698.60 656.45 (TOP OF MON) IRON ROD IN CONC

X CUT IN CONC

STUDY INCLUDED WITH THIS SUBMITTAL, CONDUCTED BY HALFF ASSOCIATES, INC., DETERMINED THIS EXISTING INFRASTRUCTURE IS SUFFICIENT TO SERVE THE ESTIMATED FUTURE DEMAND. THE STUDY RESULTS ARE SUMMARIZED IN A LETTER DATED AUGUST 18, 2021, SIGNED BY NOAH SHAFFER, PE

THIS PRELIMINARY PLAN MAKES USE OF PORTIONS OF AN EXISTING ENGINEERING REPORT PREPARED BY HALFF ASSOCIATES, INC., DATED 5/24/2016, TITLED "ENGINEERING REPORT FOR: TIMMERMAN WASTEWATER AND REGIONAL DETENTION PUBLIC INFRASTRUCTURE PLANS"; THE REPORT WAS SEALED BY MATTHEW SUTHERLAND, PE. THE REPORT SHOWS THAT WASTEWATER FLOWS FOR THE RNDC SITE WERE CACLULATED APPROPRIATELY FOR THE FUTURE ANTICIPATED DEVELOPMENT, AND WERE PLANNED TO ENTER THE CITY WASTEWATER SYSTEM SOUTH OF RNDC PROPERTY, NOT ALONG HELIOS WAY, ADDITIONALLY, THE REMAINDER OF THE HAGN-TIMMERMAN PROPERTY TO PROPERTY, NOT TO THE WASTEWATER SYSTEM IN HELIOS WAY. AS SUCH, WASTEWATER IMPROVEMENTS PROPOSED IN HELIOS WAY IN THIS PRELIMINARY PLAN ARE ONLY PROVIDED PER REQUEST OF THE CITY. SHOULD FUTURE DEVELOPMENT(S) WISH TO UTILIZE THIS WASTEWATER SYSTEM, THOSE DEVELOPMENT(S) SHOULD BE REQUIRED TO

1. THIS PLAN LIES WITHIN THE CITY OF PFLUGERVILLE FULL PURPOSE JURISDICTION.

- 2. WATER AND WASTEWATER SHALL BE PROVIDED BY THE CITY OF PFLUGERVILLE. NO LOT IN THIS SUBDIVISION SHALL BE OCCUPIED UNTIL CONNECTED TO WATER AND
- 3. A 10-FT PUBLIC UTILITY EASEMENT (P.U.E.) SHALL BE DEDICATED ALONG ALL STREET FRONTAGE(S).
- 4. EASEMENT(S) DEDICATED TO THE PUBLIC BY THIS PLAN SHALL ALSO BE SUBJECT TO THE TERMS AND CONDITIONS OF THE ENGINEERING DESIGN MANUAL. AS AMENDED. THE GRANTOR [PROPERTY OWNER(S)] HEIRS, SUCCESSORS AND ASSIGNS SHALL RETAIN THE OBLIGATION TO MAINTAIN THE SURFACE OF THE EASEMENT PROPERTY,
- 5. NO IMPROVEMENTS INCLUDING BUT NOT LIMITED TO STRUCTURES, FENCES, OR LANDSCAPING SHALL BE ALLOWED IN A PUBLIC EASEMENT, EXCEPT AS APPROVED BY
- 6. THE PROPERTY OWNER SHALL PROVIDE ACCESS TO DRAINAGE AND UTILITY EASEMENTS AS MAY BE NECESSARY AND SHALL NOT PROHIBIT ACCESS FOR THE PLACEMENT, CONSTRUCTION, INSTALLATION, REPLACEMENT, REPAIR, MAINTENANCE, RELOCATION, REMOVAL, OPERATION, AND INSPECTION OF SUCH DRAINAGE AND UTILITY FACILITIES AND RELATED APPURTENANCES
- 7. A SIX (6) FOOT WIDE SIDEWALK SHALL BE PROVIDED ON THE NORTH SIDE OF HELIOS WAY, AND A TEN (10) FOOT WIDE SIDEWALK SHALL BE PROVIDED ON THE SOUTH
- 8. STREETLIGHTS SHALL BE INSTALLED AND IN FULL WORKING ORDER WITH THE PUBLIC IMPROVEMENTS. ALL STREETLIGHTS SHALL BE IN CONFORMANCE WITH ALL CITY OF PFLUGERVILLE ORDINANCES INCLUDING BUT NOT LIMITED TO BEING DOWNCAST AND FULL CUT OFF TYPE.
- 9. THIS SUBDIVISION IS SUBJECT TO ALL CITY OF PLUGERVILLE ORDINANCES OR TECHNICAL MANUALS RELATED TO TREE PRESERVATION PER CITY ORDINANCE #1203-15-02-24 AND CITY RESOLUTION #1224-09-08-25-8A.
- 10. THE COMMUNITY IMPACT FEE RATE FOR WATER AND WASTEWATER WILL BE ASSESSED AT THE TIME OF FINAL PLAT.
- 11. ON-SITE STORM WATER FACILITIES SHALL BE PROVIDED TO MITIGATE POST-DEVELOPMENT PEAK RUNOFF RATES FOR THE 2 YEAR, 25 YEAR, AND 100 YEAR STORM
- 12. ALL ELECTRIC UTILITY INFRASTRUCTURE INCLUDING BUT NOT LIMITED TO TELEPHONE, CABLE TELEVISION, ELECTRIC UTILITY LATERAL AND SERVICE LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE CITY OF PFLUGERVILLE ENGINEERING DESIGN MANUAL.
- 13. THE OWNER OF THIS SUBDIVISION, AND HIS OR HER SUCCESSORS AND ASSIGNS, ASSUMES RESPONSIBILITY FOR PLANS FOR CONSTRUCTION OF SUBDIVISION IMPROVEMENTS WHICH COMPLY WITH APPLICABLE CODES AND REQUIREMENTS OF THE CITY OF PFLUGERVILLE.
- 14. SITE DEVELOPMENT CONSTRUCTION PLANS SHALL BE REVIEWED AND APPROVED BY THE CITY OF PFLUGERVILLE PRIOR TO ANY CONSTRUCTION.
- 15. NO PORTION OF THIS TRACT IS WITHIN A FLOOD HAZARD AREA AS SHOWN ON THE FEMA FLOOD INSURANCE RATE MAP NO. 48453C0290J DATED 08/18/2014, FOR TRAVIS COUNTY, TEXAS AND INCORPORATED AREAS.
- 16. ALL PROPOSED FENCES AND WALLS ADJACENT TO INTERSECTING PUBLIC ROADWAY RIGHT-OF-WAY OR ADJACENT TO PREIVATE ACCESS DRIVES SHALL BE IN COMPLIANCE WITH THE SIGHT DISTANCE REQUIREMENTS OF THE CITY OF PFLUGERVILLE ENGINEERING DESIGN MANUAL, AS AMENDED.
- 17. WASTEWATER AND WATER SYSTEMS SHALL CONFORM TO TCEQ (TEXAS COMMISSION ON ENVIRONMENTAL QUALITY) AND STATE BOARD OF INSURANCE REQUIREMENTS. THE OWNER UNDERSTANDS AND ACKNOWLEDGES THAT PLAT VACATION OR RE-PLATTING MAY BE REQUIRED AT THE OWNER'S SOLE EXPENSE IF PLANS TO DEVELOP THIS SUBDIVISION DO NOT COMPLY WITH SUCH CODES AND REQUIREMENTS.
- 18. CONSTRUCTION PLANS AND SPECIFICATIONS FOR ALL SUBDIVISION IMPROVEMENTS SHALL BE REVIEWED AND APPROVED BY THE CITY OF PFLUGERVILLE PRIOR TO ANY CONSTRUCTION WITHIN THE SUBDIVISION.
- 19. THE ASSESSED ROADWAY IMPACT FEE WILL BE ASSESSED AT TIME OF FINAL PLAT AND ESTABLISHED ACCORDING TO THE CITY OF PFLUGERVILLE ORDINANCE NO. 1470-20-11-24. ROADWAY IMPACT FEES WILL BE PAID PRIOR TO THE ISSUANCE OF ANY BUILDING PERMIT ISSUED AFTER 12/31/2021.

RNDC-TIMMERMAN SUBDIVISION

PRELIMINARY PLAN ONLY - NOT FOR RECORDATION

HELIOS WAY

PFLUGERVILLE, TEXAS 78660

DEVELOPMENT NOTES

BEING 34.867 ACRES IN THE T.S. BARNES SURVEY ABSTRACT NO. 67, TRAVIS COUNTY, TEXAS, BEING ALL OF THE 33.000 ACRE TRACT OF LAND CONVEYED TO REPUBLIC DISTRIBUTING COMPANY, LLC IN DOCUMENT NO. 2019196373, OFFICIAL PUBLIC RECORDS OF TRAVIS COUNTY, TEXAS (O.P.R.T.C.T.): ALSO BEING ALL OF THE

1.416 ACRE TRACT PORTION OF THE 165.15 ACRE TRACT O LAND CONVEYED TO HAGN & TIMMERMAN, LTD IN VOLUME 10398, PAGES 907, 911, 915 AND 919 OF THE PLAT RECORDS OF TRAVIS COUNTY TEXAS DESCRIBED IN THE DRIVEWAY EASEMENT RECORDED IN DOCUMENT NO. 2019193775. OF THE 75.30 ACRE TRACT OF LAND CONVEYED TO TACK DEVELOPMENT LTD IN DOCUMENT NO. 2003232092 O.P.R.T.C.T., DESCRIBED IN THE DRIVEWAY EASEMENT RECORDED IN DOCUMENT NO. 2019193775, O.P.R.T.C.T

SUBMITTAL DATE: 8/23/2021 CITY OF PFLUGERVILLE PFLUGERVILLE ET **PROJECT**

LOCATION / ZONING MAP 1"=1000' (APPROX.)

CIVIL ENGINEER

<u>DTH</u>		
33'		HA
Ю'		9500 AMBEI
. <u></u>		BI III DING E

RNDC-Timmerman Subdivision

<u>USE</u>

WAREHOUSE/ 33.000 DISTRIBUTION 1877'

CENTER

R.O.W. 1.867 R.O.W. 1027' 8

TOTAL 34.867

BUILDING F, SUITE 125 AUSTIN, TEXAS 78759-5356 TEL (512) 777-4600 FAX (512) 252-8141 TBPÈLS ÉNGINEERING FIRM #312

CITY APPROVED REVISIONS & CORRECTIONS

NO.	DESCRIPTION	REVISE (R) CORRECT (C) ADD (A) VOID (V) Sheet No.'s	NET CHANGE IMPERVIOUS COVER (SQ. FT.) / %	TOTAL IMPERVIOUS COVER (SQ. FT.) / %	DESIGN ENGINEER SIGNATURE	CITY OF PFLUGERVILLE APPROVAL	APPROVAL DATE

CONTACT INFO

ELECTRIC

ED FLOWERS UTILITY DESIGNER, SR. ONCOR | PROJECT MANAGEMENT & DESIGN SFRVICES 350 TEXAS AVE ROUND ROCK, TX 78664 TEL: 512.352.4506 CELL: 512.639.5220 EDWARD.FLOWERS@ONCOR.COM ONCOR.COM

SANITARY SEWER

CITY OF PFLUGERVILLE PUBLIC WORKS 15500 SUN LIGHT NEAR WAY PFLUGERVILLE, TX 78660 TFI: 512-990-6400 FAX: 512-989-1052

COMMUNICATIONS

JOHN RODRIGUEZ MANAGER - OSP PLNG & ENGRG DESIGN AT&T TEXAS 712 E. HUNTLAND DR. RM 229 AUSTIN, TX 78752 TEL: 512.870.4745 CELL: 512.968.7156

CITY OF PFLUGERVILLE PUBLIC WORKS 15500 SUN LIGHT NEAR WAY PFLUGERVILLE, TX 78660 TEL: 512-990-6400 FAX: 512-989-1052

BRADLEY CROSSWHITE BRAD.CROSSWHITE@ATMOSENERGY.COM

	Sheet List Table
Sheet Number	Sheet Title
1	COVER SHEET
2	PRELIMINARY PLAN
3	EXISTING CONDITIONS AND PROPOSED GRADING PLAN
4	WATER AND WASTEWATER UTILITY PLAN
5	EXISTING DRAINAGE AREA MAP
6	PROPOSED DRAINAGE AREA MAP
7	DRAINAGE CALCULATIONS
8	PROPOSED SUB-DRAINAGE AREA MAP & CALCULATIONS
9	TREE SURVEY
10	ILLUMINATION PLAN



SURVEYOR'S CERTIFICATION

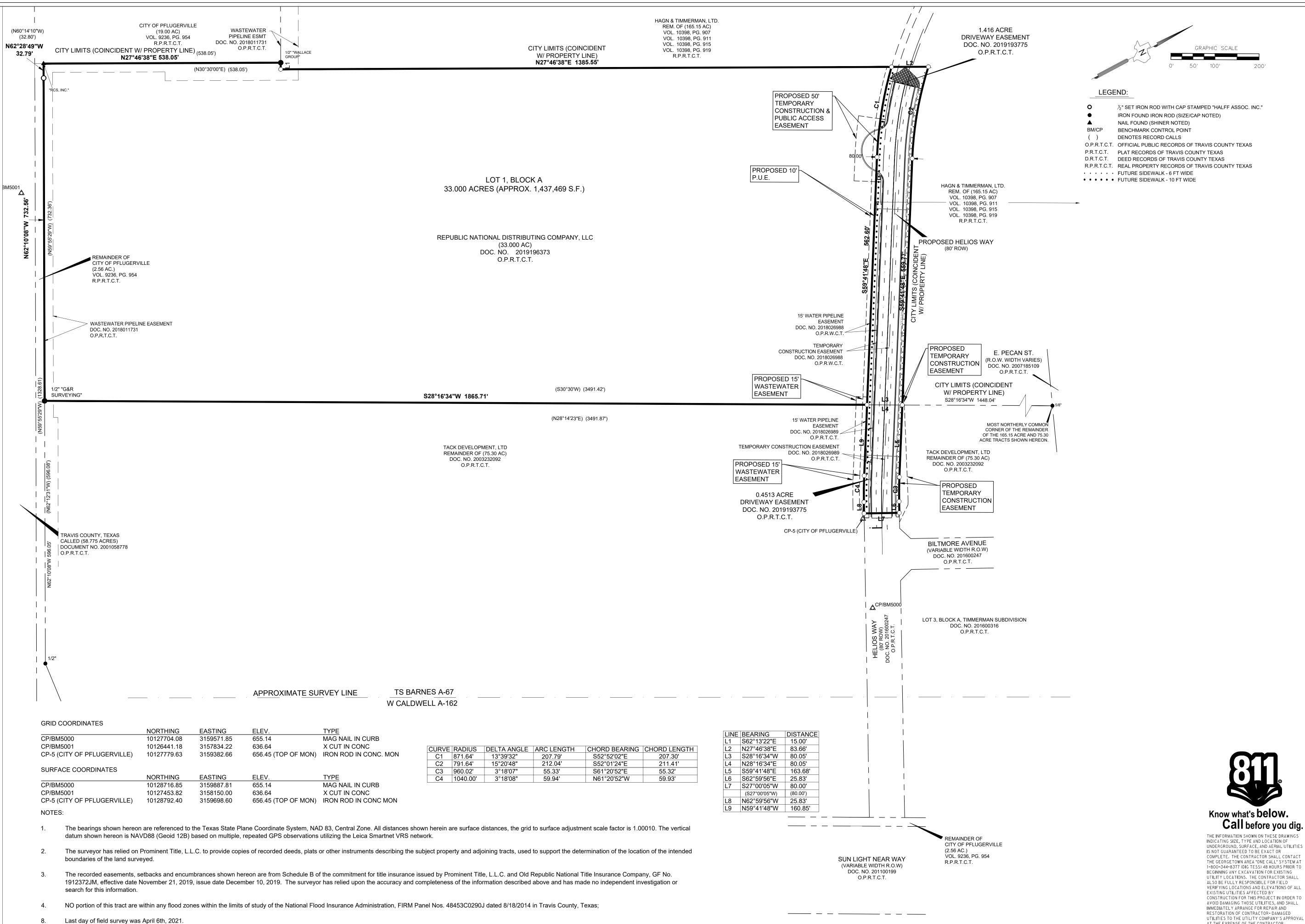
STATE OF TEXAS KNOW ALL MEN BY THESE PRESENTS:

THAT I, CUTRIS W. WATTS, DO HERBY CERTIFY THAT I PREPARED THIS PLAN FROM AN ACTUAL AND ACCURATE ON-THE-GROUND SURVEY OF THE LAND, AND THAT THE CORNER MONUMENTS SHOWN THEREON MARKING THE BOUNDARY OF THE PROPOSED SUBDIVISION, BUT NOT INTERIOR LOT LINES, WERE PROPERLY PLACED UNDER MY PERSONAL SUPERVISION, IN ACCORDANCE WITH ALL CITY OF PFLUGERVILLE, TEXAS CODES AND ORDINANCES AND THAT ALL KNOWN EASEMENTS WITHIN THE BOUNDARY OF THE PLAT ARE SHOWN HEREON.

SIGNATURE OF REGISTERED PROFESSIONAL LAND SURVEYOR REGISTERED PROFESSIONAL LAND SURVEYOR TEXAS REGISTRATION NO. 6614

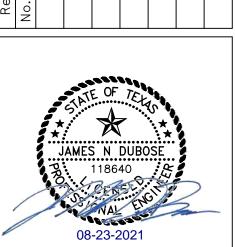


ALL RESPONSIBILITY FOR THE ADEQUACY OF THESE PLANS REMAINS WITH THE ENGINEER WHO PREPARED THEM. IN ACCEPTING THESE PLANS, THE CITY OF PflUGERVILLE MUST RELY UPON THE ADEQUACY OF THE WORK OF THE DESIGN ENGINEER.



.. \ReferencesAUS\C-XREF-ROAD-36677.dwg
.. \ReferencesAUS\C-XREF-PAVE-30937.dwg
.. \ReferencesAUS\TS-36677.006-HELIOS WAY.dw
U:_APLS Seal\uSA Seal.dwg
.. \ReferencesAUS\C-XREF-TBLK-36677.dwg
.. \ReferencesAUS\C-XREF-TBLK-36677.dwg
.. \ReferencesAUS\SV-SITE-31018.dwg
.. \ReferencesAUS\SV-SITE-31018.dwg

RIBU \simeq



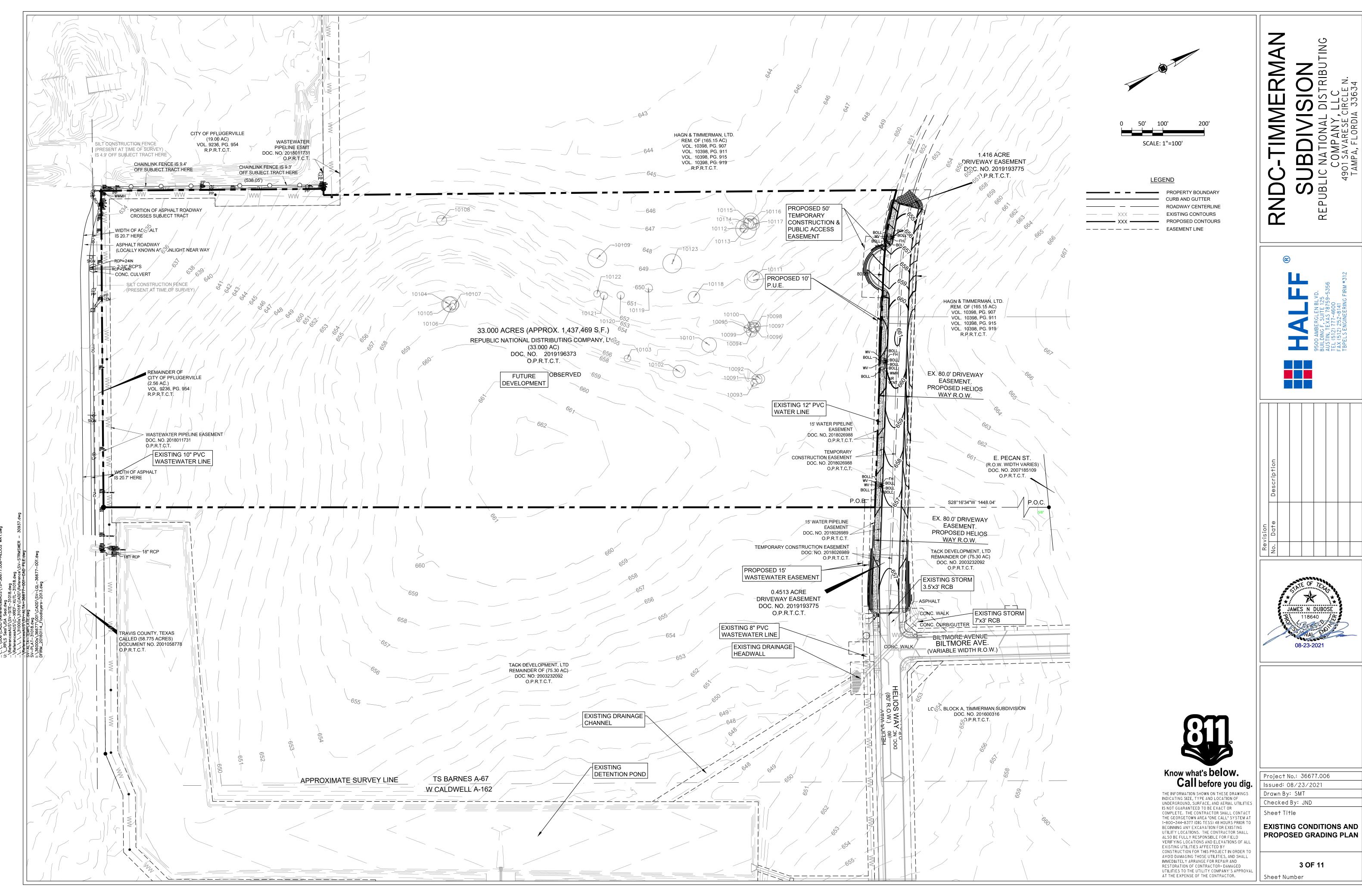
THE INFORMATION SHOWN ON THESE DRAWINGS UNDERGROUND, SURFACE, AND AERIAL UTILITIES COMPLETE. THE CONTRACTOR SHALL CONTACT THE GEORGETOWN AREA "ONE CALL" SYSTEM AT 1-800-344-8377 (DIG TESS) 48 HOURS PRIOR TO BEGINNING ANY EXCAVATION FOR EXISTING UTILITY LOCATIONS. THE CONTRACTOR SHALL VERIFYING LOCATIONS AND ELEVATIONS OF ALI CONSTRUCTION FOR THIS PROJECT IN ORDER TO AVOID DAMAGING THOSE UTILITIES, AND SHALL UTILITIES TO THE UTILITY COMPANY'S APPROVA AT THE EXPENSE OF THE CONTRACTOR.

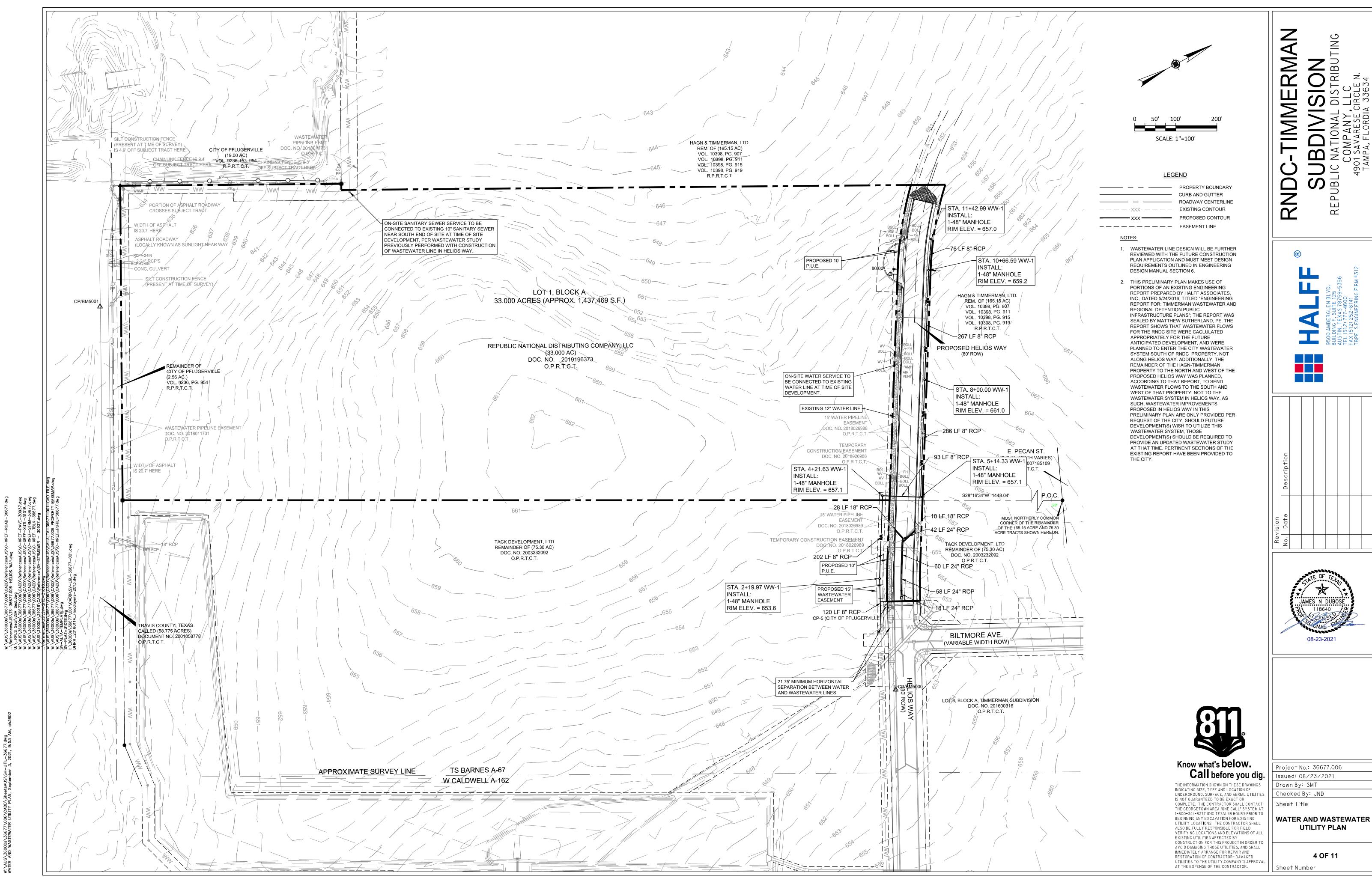
Project No.: 36677.006 Issued: 08/23/2021 Drawn By: SMT Checked By: JND

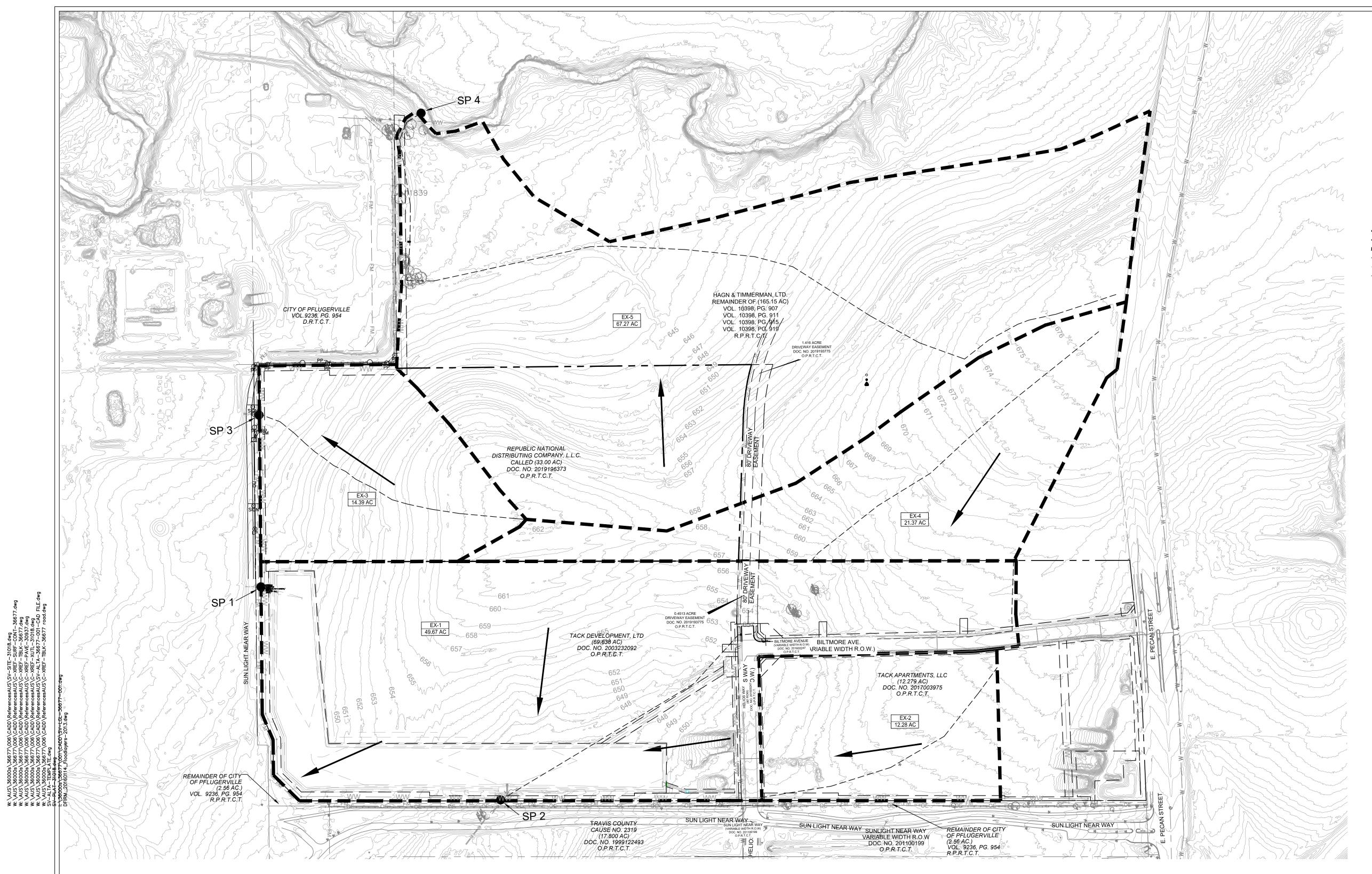
PRELIMINARY PLAN

2 OF 11

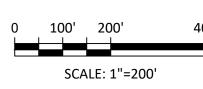
Sheet Number

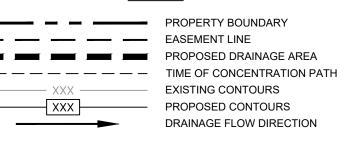


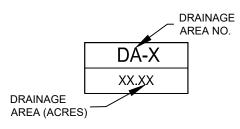












NOTES:

- RUNOFF CALCULATIONS WERE PERFORMED
 UTILIZING ATLAS-14 RAINFALL DATA AND THE SCS METHOD FOR PEAK RUNOFF CALCULATION, WHICH UTILIZES THE TR-55 METHODOLOGY FOR DETERMINATION OF TIME OF CONCENTRATION.
- 2. IMPERVIOUS COVER AND PEAK RUNOFF FOR DRAINAGE AREA EX-2 WAS CALCULATED INCORPORATING THE EXISTING APARTMENT COMPLEX WITHIN THAT DRAINAGE AREA.
- 3. IMPERVIOUS COVER ASSUMPTIONS ON UNDEVELOPED AREAS WERE TAKEN FROM THE PREVIOUSLY-APPROVED PLANS FOR THE REGIONAL DETENTION POND TO THE SOUTHEAST.

JAMES N DUBOSE 118640

RE

	Exist	ing Outfall T	Гable	
Study Point	Q ₂ (CFS)	Q ₁₀ (CFS)	Q ₂₅ (CFS)	Q ₁₀₀ (CFS)
SP-1	8.23	21.91	24.8	27.77
SP-2	46.01	88.35	171.22	335.96
SP-3	26.56	52.99	72.83	109.24
SP-4	83.76	167.67	230.65	346.38

5677\006\CADD\ReferencesAUS\SV-SITE-31018.dwg
5677\006\CADD\ReferencesAUS\C-XREF-SURF-CONT-36677.d
5677\006\CADD\ReferencesAUS\C-XREF-TBLK-36677.dwg
5677\006\CADD\ReferencesAUS\C-XREF-TBLK-36677.dwg
5677\006\CADD\ReferencesAUS\C-XREF-PAVE-30937.dwg
5677\006\CADD\ReferencesAUS\C-XREF-XUIL-31018.dwg
5677\006\CADD\ReferencesAUS\C-XREF-XUIL-31018.dwg
5677\006\CADD\ReferencesAUS\C-XREF-XUIL-31018.dwg
5677\006\CADD\ReferencesAUS\C-XREF-TBLK-36677\road.dw

Basin		Sheet Flow			Shallow Concentrated Flow			Channel Flow						
	Length	Slope	e Mannings n	Tt	Length	Length Slope	Slope Surface	ace T _t	T _t Length	Slope	Mannings n	R	T _t	T _c
	ft	ft/ft		hr	ft	ft/ft		hr	ft	ft/ft		ft	hr	min
EX-1*	100	0.011	0.13	0.176	1045	0.015	Paved	0.138	1197	0.015	0.013	0.5	0.038	21.10
EX-2**				-		-	Paved	-	_	_	-		-	5.00
EX-3*	100	0.010	0.130	0.171	1050	0.025	Unpaved	0.114	-	-	-	-	-	17.10
EX-4*	100	0.010	0.130	0.185	1459	0.010	Unpaved	0.229	_	-	-	-	-	28.20
EX-5	100	0.008	0.130	0.187	2032	0.017	Unpaved	0.266	808	0.0055	0.026	0.1	0.247	
EX-5 Cont.									555	0.0064	0.026	0.55	0.050	45.00

EX-5 Cont. | 555

*Times of Concentration taken from Timmerman Wastewater and Regional Detention plans by Halff Associates, Inc. dated 11/22/2016

Thice of Contour and Home Than Washington and Neglorial Editination plane by Hain 7,000014,00, 110. dated 11/22/2010
**Time of Concentration taken from Commerce Place Apartments plans by Randall Jones & Associates Engineering, Inc. dated 9/6/2016

Existing Conditions Summary Table									
Hydraflow Hydrographs Stormwater Runoff Calculations for Existing Drainage Conditions									
Basin	Area (Ac.)	Imp. Cover (Ac.)	CN	Tc	Study Point	Q ₂	Q ₁₀	Q ₂₅	Q ₁₀₀
Dasiii	Alea (AC.)	imp. Cover (Ac.)	CN	(min.)	Study Point	(CFS)	(CFS)	(CFS)	(CFS)
EX-1	49.67	42.35	95.2	21.1	1,2	127.26	212.51	274.97	389.65
EX-2	12.28	11.39	94.0	5	1,2	44.21	74.49	96.64	137.25
EX-3	14.39	0	82.0	17.1	3	26.56	55.99	72.83	109.24
EX-4	21.37	0	82.2	28.2	1,2	33.61	66.86	91.73	137.35
EX-5	67.27	0	82.0	45	4	83.76	167.67	230.65	346.38



Know what's below. Call before you dig.

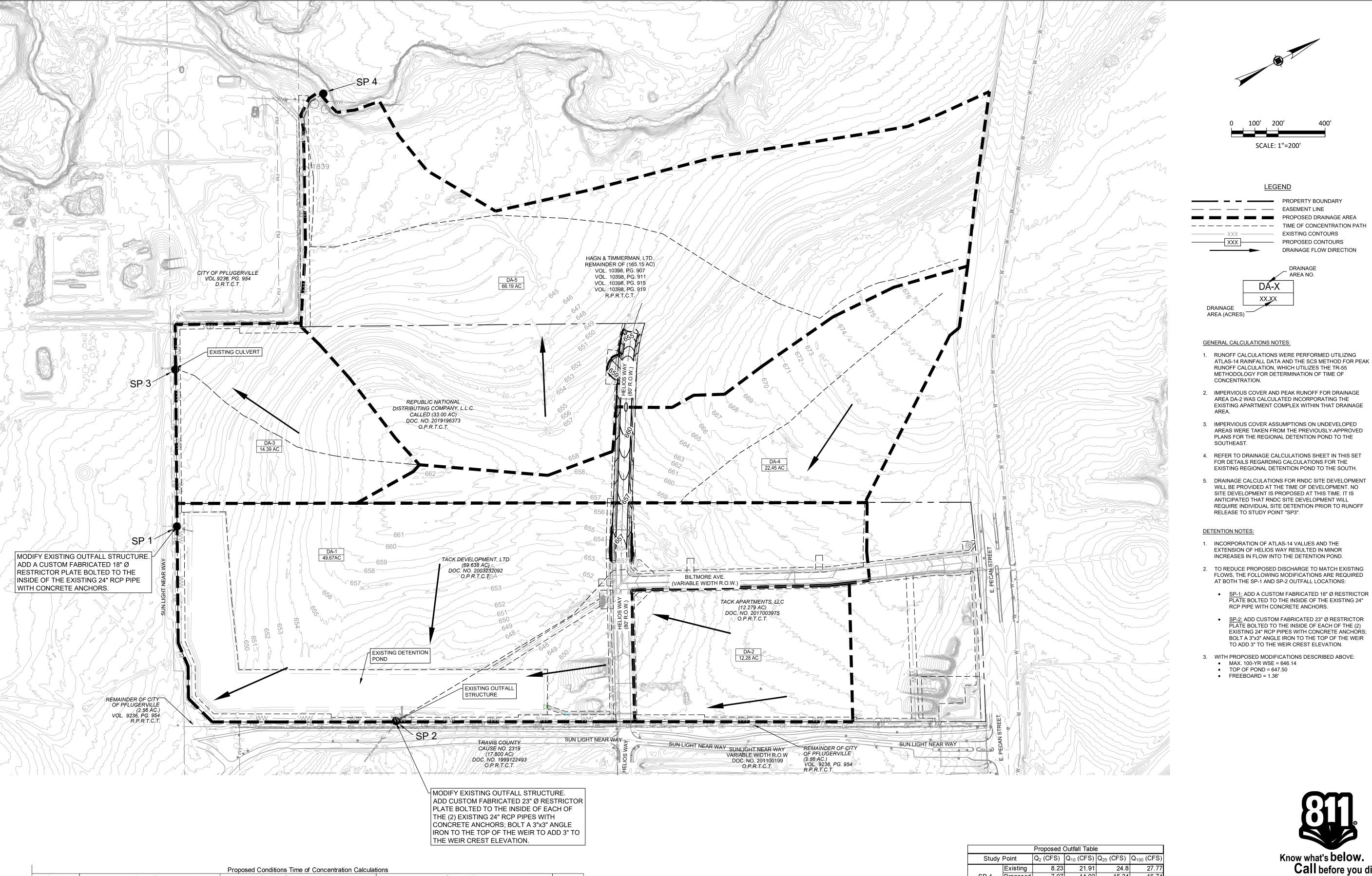
THE INFORMATION SHOWN ON THESE DRAWINGS
INDICATING SIZE, TYPE AND LOCATION OF
UNDERGROUND, SURFACE, AND AERIAL UTILITIES
IS NOT GUARANTEED TO BE EXACT OR
COMPLETE. THE CONTRACTOR SHALL CONTACT
THE GEORGETOWN AREA "ONE CALL" SYSTEM AT
1-800-344-8377 (DIG TESS) 48 HOURS PRIOR TO
BEGINNING ANY EXCAVATION FOR EXISTING BEGINNING ANY EXCAVATION FOR EXISTING UTILITY LOCATIONS. THE CONTRACTOR SHALL
ALSO BE FULLY RESPONSIBLE FOR FIELD
VERIFYING LOCATIONS AND ELEVATIONS OF ALL
EXISTING UTILITIES AFFECTED BY
CONSTRUCTION FOR THIS PROJECT IN ORDER TO
AVOID DAMAGING THOSE UTILITIES, AND SHALL IMMEDIATELY ARRANGE FOR REPAIR AND
RESTORATION OF CONTRACTOR- DAMAGED
UTILITIES TO THE UTILITY COMPANY'S APPROVAL AT THE EXPENSE OF THE CONTRACTOR.

- 1	
-	
	Project No.: 36677.006
	Issued: 08/23/2021
	Drawn By: SMT
	Checked By: JND
١	CI I T'II

EXISTING DRAINAGE AREA MAP

5 OF 11

Sheet Number



Proposed Proposed

8.23 21.91 7.97 14.02 15.24 -0.26 -7.89 -9.56 -11.03 46.01 88.35 171.22 335.96 Proposed 43.66 77.26 Change -2.35 -11.09 Existing 26.56 52.99 72.83 26.56 52.99 72.83 Existing 83.76 167.67 230.65 346.38 Proposed 82.41 164.97 226.95 Change -1.35

SCALE: 1"=200'

PROPERTY BOUNDARY EASEMENT LINE

— — — — TIME OF CONCENTRATION PATH EXISTING CONTOURS

DRAINAGE FLOW DIRECTION

——— PROPOSED CONTOURS

AREA NO.

AREAS WERE TAKEN FROM THE PREVIOUSLY-APPROVED

WILL BE PROVIDED AT THE TIME OF DEVELOPMENT. NO

SP-1: ADD A CUSTOM FABRICATED 18" Ø RESTRICTOR PLATE BOLTED TO THE INSIDE OF THE EXISTING 24"

<u>SP-2:</u> ADD CUSTOM FABRICATED 23" Ø RESTRICTOR PLATE BOLTED TO THE INSIDE OF EACH OF THE (2)

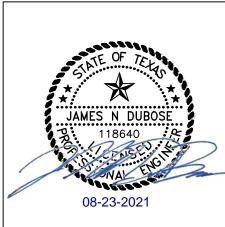
EXISTING 24" RCP PIPES WITH CONCRETE ANCHORS; BOLT A 3"x3" ANGLE IRON TO THE TOP OF THE WEIR TO ADD 3" TO THE WEIR CREST ELEVATION.

RCP PIPE WITH CONCRETE ANCHORS.

 MAX. 100-YR WSE = 646.14 TOP OF POND = 647.50

FREEBOARD = 1.36'

ANTICIPATED THAT RNDC SITE DEVELOPMENT WILL REQUIRE INDIVIDUAL SITE DETENTION PRIOR TO RUNOFF



Know what's below.

Call before you dig. THE INFORMATION SHOWN ON THESE DRAWINGS INDICATING SIZE, TYPE AND LOCATION OF UNDERGROUND, SURFACE, AND AERIAL UTILITIES IS NOT GUARANTEED TO BE EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT THE GEORGETOWN AREA "ONE CALL" SYSTEM AT 1-800-344-8377 (DIG TESS) 48 HOURS PRIOR TO BEGINNING ANY EXCAVATION FOR EXISTING UTILITY LOCATIONS. THE CONTRACTOR SHALL ALSO BE FULLY RESPONSIBLE FOR FIELD VERIFYING LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES AFFECTED BY CONSTRUCTION FOR THIS PROJECT IN ORDER TO AVOID DAMAGING THOSE UTILITIES, AND SHALL IMMEDIATELY ARRANGE FOR REPAIR AND RESTORATION OF CONTRACTOR-DAMAGED UTILITIES TO THE UTILITY COMPANY'S APPROVA AT THE EXPENSE OF THE CONTRACTOR.

Project No.: 36677.006 Issued: 08/23/2021 Drawn By: SMT Checked By: JND Sheet Title

> PROPOSED DRAINAGE **AREA MAP**

6 OF 11 Sheet Number

Shallow Concentrated Flow Channel Flow Slope Surface ft/ft ft/ft ft/ft hr min 100 0.176 1045 Paved 0.138 1197 0.013 0.038 21.10 5.00 Paved DA-3* 0.011 0.010 0.171 0.025 Unpaved 17.10 DA-4* 0.016 0.010 0.130 0.185 1459 0.010 0.225 28.20 Unpaved DA-5 100 0.008 0.130 0.187 0.017 0.0055 0.1 0.247 Unpaved 0.266 808 0.026

*Times of Concentration taken from Timmerman Wastewater and Regional Detention plans by Halff Associates, Inc. dated 11/22/2016

**Time of Concentration taken from Commerce Place Apartments plans by Randall Jones & Associates Engineering, Inc. dated 9/6/2016

555

0.0064 0.026

Hydraflow Hydrographs Stormwater Runoff Calculations for Proposed Conditions Q₁₀₀ Q_{25} Area (Ac.) (CFS) (CFS) (CFS) (CFS) (min.) DA-1 DA-2 49.67 95.2 274.97 389.65 12.28 11.39 94.0 44.21 74.49 96.64 DA-3 14.39 82.0 17.1 26.35 72.09 52.46 108.40 22.45 0.435 97.53 145.37 83.0 36.36 71.42 DA 5 66.19 82.0 82.41 164.97 226.95 340.82 0.50

Proposed Conditions Summary Table

0.55 0.050 45.00

DA-5 Cont.

Hydrograph Summary Report

DA Calcs for Plan Sheet.gpw

off 274.97 off 96.64 off 72.83 off 91.73 off 230.65 off 58.24 off 216.73 399.47 196.46 17.78 341.23 209.86	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	734 724 732 740 750 734 734 736 756	1,444,991 323,019 328,457 489,639 1,521,752 306,046 1,138,945 2,257,649 2,257,648	1, 2, 4,			EX 1 EX 2 EX 3 EX 4 EX 5 EX 1.1 EX 1.2 EX to Pond	SP-3 SP-4, EX.
off 72.83 off 91.73 off 230.65 off 58.24 off 216.73 399.47 196.46 17.78	2 2 2 2 2 2 2 2 2	732 740 750 734 734 734 756	328,457 489,639 1,521,752 306,046 1,138,945 2,257,649 2,257,648				EX 3 EX 4 EX 5 EX 1.1 EX 1.2	SP-4, EX. —
off 91.73 230.65 off 58.24 off 216.73 399.47 196.46 17.78	2 2 2 2 2 2 2	740 750 734 734 734 756	489,639 1,521,752 306,046 1,138,945 2,257,649 2,257,648				EX 4 EX 5 EX 1.1	SP-4, EX. —
off 230.65 off 58.24 off 216.73 399.47 196.46 17.78 341.23	2 2 2 2	750 734 734 734 756	1,521,752 306,046 1,138,945 2,257,649 2,257,648				EX 1.1 EX 1.2	_
56.24 56.24 56.24 56.24 399.47 196.46 17.78 341.23	2 2 2	734 734 734 756	306,046 1,138,945 2,257,649 2,257,648				EX 1.1	_
399.47 196.46 17.78 341.23	2 2 2	734 734 756	1,138,945 2,257,649 2,257,648				EX 1.2	_
399.47 196.46 17.78 341.23	2 2	734 756	2,257,649 2,257,648					_
196.46 17.78 341.23	2	756	2,257,648				EX to Pond	
17.78 341.23	2			10				
341.23		762	206 045		645.27	735,453	EX Pond Out	SP-1 & 2, I
	2		306,045	7	644.40	100,863	2Yr Pond Route DA 1	_ '
209.86		734	1,951,603	2, 4, 8,			Ex to DA 2 side of Pond	_
	2	752	1,951,602	13	645.43	590,822	EX 2Yr Pond Route DA 2	_
off 97.53	2	740	522,210				DA 4	
off 226.95	2	750	1,497,322				DA 5	SP-4, PR.
404.97	2	734	2,290,217	1, 2, 16,			PR to Pond	
175.02	2	758	2,290,218	19	645.48	807,798	PR Pond Out	SP-1 & 2, I
12.26	2	770	306,045	7	644.59	117,597	PR 2Yr Pond Route DA 1	_
346.82	2	736	1,984,173	2, 8, 16,			PR to DA 2 side of Pond	_
197.48	2	754	1,984,173	22	645.64	641,848	PR 2Yr Pond Route DA 2	_
	404.97 175.02 12.26 346.82	404.97 2 175.02 2 12.26 2 346.82 2	404.97 2 734 175.02 2 758 12.26 2 770 346.82 2 736	404.97 2 734 2,290,217 175.02 2 758 2,290,218 12.26 2 770 306,045 346.82 2 736 1,984,173	404.97 2 734 2,290,217 1, 2, 16, 175.02 2 758 2,290,218 19 12.26 2 770 306,045 7 346.82 2 736 1,084,173 2, 8, 16,	404.97 2 734 2,290,217 1, 2, 16, 175.02 2 758 2,290,218 19 645.48 12.26 2 770 306,945 7 644.59 346.82 2 736 1,984,173 2, 8, 16,	404.97 2 734 2,290,217 1, 2, 16, 175.02 2 758 2,290,218 19 645.48 807,798 12.26 2 770 306,045 7 644.59 117,597 346.82 2 736 1,984,173 2, 8, 16,	404.97 2 734 2,290,217 1, 2, 16, PR to Pond 175.02 2 758 2,290,218 19 645.48 807,798 PR Pond Out 12.26 2 770 306,045 7 644.59 117,597 PR 2Yr Pond Route DA 1 346.82 2 736 1,984,173 2, 8, 16, PR to DA 2 side of Pond

Return Period: 25 Year

Monday, 08 / 30 / 2021

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description	
1	SCS Runoff	212.51	2	734	1,103,213				EX 1	
2	SCS Runoff	74.49	2	724	245,372				EX 2	
3	SCS Runoff	52.99	2	732	236,309				EX 3	SP-3
4	SCS Runoff	66.86	2	740	352,615				EX 4	
5	SCS Runoff	167.67	2	750	1,094,826				EX 5	SP-4, EX.
7	SCS Runoff	45.01	2	734	233,659			******	EX 1.1	_
8	SCS Runoff	167.50	2	734	869,557				EX 1.2	_
10	Combine	304.58	2	734	1,701,201	1, 2, 4,			EX to Pond	
11	Reservoir	110.93	2	762	1,701,202	10	644.84	594,152	EX Pond Out	SP-1 & 2, EX
-12	Reservoir	14.91	2	760	233,658	7	644.10	74,888	2Yr Pond Route DA 1	_
-13	Combine	259.58	2	734	1,467,544	2, 4, 8,			Ex to DA 2 side of Pond	_
-14	Reservoir	121.34	2	758	1,467,542	13	645.03	493,902	EX 2Yr Pond Route DA 2	_
16	SCS Runoff	71.42	2	740	377,528				DA 4	
17	SCS Runoff	164.97	2	750	1,077,249				DA 5	SP-4, PR.
19	Combine	308.89	2	734	1,726,115	1, 2, 16,			PR to Pond	
20	Reservoir	90.55	2	766	1,726,113	19	645.03	650,103	PR Pond Out	SP-1 & 2, PF
21	Reservoir	10.85	2	768	233,657	7	644.22	85,619	PR 2Yr Pond Route DA 1	_
22	Combine	263.97	2	736	1,492,457	2, 8, 16,			PR to DA 2 side of Pond	_
23	Reservoir	104.94		760	1,492,455	22	645.21	536,094	PR 2Yr Pend Route DA 2	
	Calcs for Pla	an Sheet o	IDW/		Return P	Period: 10 \	Vear	Monday 0	8 / 30 / 2021	

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description	
1	SCS Runoff	389.65	2	734	2,076,661				EX 1	
2	SCS Runoff	137.25	2	724	466,668				EX 2	
3	SCS Runoff	109.24	2	732	502,439				EX 3	SP-3
4	SCS Runoff	137.35	2	740	748,226				EX 4	
5	SCS Runoff	346.38	2	750	2,327,819				EX 5	SP-4, EX.
7	SCS Runoff	82.53	2	734	439,832				EX 1.1	
8	SCS Runoff	307.12	2	734	1,636,829				EX 1.2	
10	Combine	573.76	2	734	3,291,555	1, 2, 4,			EX to Pond	
11	Reservoir	364.18	2	752	3,291,557	10	645.89	949,520	EX Pond Out	SP-1 & 2,
-12	Reservoir	22.43	2	764	439,831	7	644.99	152,548	2Yr Pond Route DA 1	_
13	Combine	491.23	2	734	2,851,723	2, 4, 8,			Ex to DA 2 side of Pond	_
-14	Reservoir	372.92	2	748	2,851,722	13	646.01	730,383	EX 2Yr Pond Route DA 2	_
16	SCS Runoff	145.37	2	740	794,727				DA 4	
17	SCS Runoff	340.82	2	750	2,290,448				DA 5	SP-4, PR
19	Combine	581.37	2	734	3,338,057	1, 2, 16,			PR to Pond	
20	Reservoir	350.16	2	752	3,338,055	19	646.14	1,038,143	PR Pond Out	SP-1 & 2,
21	Reservoir	14.49	2	776	439,831	7	645.26	180,062	PR 2Yr Pond Route DA 1	_ '
22	Combine	498.90	2	736	2,898,225	2, 8, 16,			PR to DA 2 side of Pond	
23	Reservoir	366.63	2	748	2,898,225	22	646.25	791,620	PR 2Yr Pond Route DA 2	_
DA	Calcs for Pla	an Sheet.ç	jpw		Return P	eriod: 100	Year	Monday, 0	8 / 30 / 2021	

Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Monday, 08 / 30 / 2021 Pond No. 5 - Adjusted

Pond Data

Contours -User-defined contour areas. Average end area method used for volume calculation. Begining Elevation = 640.52 ft

Stage / Storage Table Elevation (ft) Contour area (sqft) Incr. Storage (cuft) Total storage (cuft)

ulvert / O	rifice Structures		Weir Structu	res
5.98	648.00	374,131	185,332	1,532,777
6.48	647.00	367,198	360,289	1,347,445
5.48	646.00	353,378	345,713	987,157
4.48	645.00	338,047	303,339	641,444
3.48	644.00	268,631	211,411	338,105
2.48	643.00	154,190	101,366	126,695
1.48	642.00	48,542	24,986	25,328
0.48	641.00	1,429	343	343
0.00	640.52	00	0	0

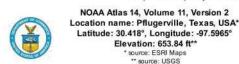
	[A]	[B]	[C]	[PrfRsr]		[A]	[B]	[C]	[D]
Rise (in)	= 0.00	18.00	23.00	0.00	Crest Len (ft)	= 0.00	50.00	0.00	0.00
Span (in)	= 0.00	18.00	23.00	0.00	Crest El. (ft)	= 0.00	644.75	0.00	0.00
No. Barrels	= 0	1	2	0	Weir Coeff.	= 3.33	3.33	3.33	3.33
Invert El. (ft)	= 0.00	641.52	640.52	0.00	Weir Type	=	Ciplti		
Length (ft)	= 0.00	43.00	48.00	0.00	Multi-Stage	= No	No	No	No
Slope (%)	= 0.00	0.50	0.50	n/a	•				
N-Value	= .013	.013	.013	n/a					
Orifice Coeff.	= 0.60	0.60	0.60	0.60	Exfil.(in/hr)	= 0.000 (b)	/ Contour)		
Multi-Stage	= n/a	No	No	No	TW Elev. (ft)	= 0.00	•		

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s). Storage Elevation Clv A Clv B Clv C PrfRsr Wr A Wr B Wr C Wr D Exfil User Total

Stage	Storage	ft	cfs	cfs	cfs	cfs	wr A cfs	cfs	cfs	cfs	cfs	user cfs	cfs
0.00	0	640.52		0.00	0.00			0.00					0.000
0.05	34	640.57		0.00	0.03 ic			0.00					0.029
0.10	69	640.62		0.00	0.11 ic			0.00					0.115
0.14	103	640.66		0.00	0.26 ic			0.00					0.256
0.19	137	640.71		0.00	0.45 ic			0.00					0.449
0.24 0.29	171 206	640.76 640.81		0.00 0.00	0.70 ic 0.99 ic			0.00					0.698 0.995
0.29	240	640.86		0.00	1.34 ic			0.00					1.341
0.38	274	640.90		0.00	1.74 ic			0.00					1.738
0.43	309	640.95		0.00	2.18 ic			0.00					2.181
0.48	343	641.00		0.00	2.67 ic			0.00					2.675
0.58	2,842	641.10		0.00	3.65 oc			0.00					3.649
0.68	5,340	641.20		0.00	4.69 oc			0.00					4.694
0.78 0.88	7,839 10,337	641.30 641.40		0.00 0.00	5.78 oc 6.89 oc			0.00					5.776 6.894
0.88	12,836	641.50		0.00	8.04 oc			0.00					8.036
1.08	15,334	641.60		0.04 ic	9.16 oc			0.00					9.191
1.18	17,833	641.70		0.17 ic	10.28 oc			0.00					10.45
1.28	20,331	641.80		0.41 ic	11.35 oc			0.00					11.76
1.38	22,830	641.90		0.74 ic	12.38 oc			0.00					13.12
1.48	25,328	642.00		1.11 oc	13.35 oc			0.00					14.46
1.58 1.68	35,465 45,602	642.10 642.20		1.49 oc 1.89 oc	14.22 oc 14.95 oc			0.00 0.00					15.71 16.84
1.78	55,738	642.30		2.31 oc	15.50 oc			0.00					17.81
1.88	65,875	642.40		2.71 oc	15.75 oc			0.00					18.46
1.98	76,011	642.50		3.11 oc	17.49 oc			0.00					20.60
2.08	86,148	642.60		3.49 oc	20.16 oc			0.00					23.65
2.18	96,285	642.70		3.83 oc	22.53 oc			0.00					26.36
2.28	106,421	642.80		4.12 oc	24.66 oc			0.00					28.79
2.38 2.48	116,558 126,695	642.90 643.00		4.34 oc 4.42 oc	26.63 oc 28.46 oc			0.00					30.97 32.88
2.58	147,836	643.10		5.10 oc	30.18 oc			0.00					35.28
2.68	168,977	643.20		5.91 oc	31.81 oc			0.00					37.71
2.78	190,118	643.30		6.61 oc	33.35 oc			0.00					39.97
2.88	211,259	643.40		7.25 oc	34.83 oc			0.00					42.08
2.98	232,400	643.50		7.83 oc	36.25 oc			0.00					44.08
3.08	253,541	643.60		8.38 oc	37.62 oc			0.00					46.00
3.18	274,682	643.70		8.89 oc	38.93 oc			0.00					47.82
3.28	295,823	643.80		9.37 oc	40.21 oc			0.00					49.58
3.38 3.48	316,964 338,105	643.90 644.00		9.83 oc 10.27 oc	41.44 oc 42.64 oc			0.00					51.27 52.92
3.58	368,439	644.10		10.27 oc	43.81 oc			0.00					52.92 54.50
3.68	398,773	644.20		11.10 oc	44.95 oc			0.00					56.05
3.78	429,107	644.30		11.49 oc				0.00					57.54
3.88	459,441	644.40			47.14 oc			0.00					59.00
3.98	489,775	644.50			48.19 oc			0.00					60.43
4.08 4.18	520,108 550,442	644.60 644.70		12.59 oc 12.94 oc	49.08 ic 49.86 ic			0.00					61.67 62.80
4.28	580,776	644.80		13.27 oc	50.63 ic			1.85					65.75
4.38	611,110	644.90		13.60 oc				9.65					74.64
4.48	641,444	645.00		13.92 oc	52.13 ic			20.81					86.87
4.58	676,015	645.10		14.24 oc				34.47					101.58
4.68	710,587	645.20		14.54 oc	53.59 ic			50.26					118.40
4.78 4.88	745,158 779,729	645.30 645.40		14.81 ic 15.05 ic	54.31 ic 55.02 ic			67.90 87.23					137.02 157.30
4.98	814,300	645.50		15.05 ic	55.02 ic			108.12					179.12
5.08	848,872	645.60		15.52 ic	56.40 ic			130.46					202.39
5.18	883,443	645.70		15.76 ic	57.08 ic			154.13					226.96
5.28	918,014	645.80		15.98 ic	57.75 ic			179.09					252.83
5.38	952,585	645.90		16.21 ic	58.42 ic			205.28					279.90
5.48	987,157	646.00		16.43 ic	59.07 ic			232.69					308.20
5.58 5.68	1,023,185 1,059,214	646.10 646.20		16.65 ic 16.87 ic	59.72 ic 60.37 ic			261.16 290.72					337.53 367.95
5.78	1,095,243	646.30		17.08 ic	61.00 ic			321.28					399.36
5.88	1,131,272	646.40		17.29 ic	61.63 ic			352.86					431.78
5.98	1,167,300	646.50		17.50 ic	62.25 ic			385.41					465.16
6.08	1,203,329	646.60		17.70 ic	62.87 ic			418.93					499.50
6.18	1,239,358	646.70		17.91 ic	63.48 ic			453.32					534.71
6.28	1,275,387	646.80		18.11 ic	64.09 ic			488.63					570.83
6.38 6.48	1,311,415 1,347,445	646.90 647.00		18.31 ic 18.50 ic	64.69 ic 65.28 ic			524.81 561.94					607.81 645.72
6.53	1,365,978	647.05		18.60 ic	65.58 ic			580.77					664.94
6.58	1,384,511	647.10		18.70 ic	65.87 ic			599.80					684.37
6.63	1,403,044	647.15		18.79 ic	66.16 ic			619.07					704.02
6.68	1,421,578	647.20		18.89 ic	66.45 ic			638.51					723.85
6.73	1,440,111	647.25		18.99 ic	66.74 ic			658.10					743.83
6.78 6.83	1,458,644 1,477,177	647.30 647.35		19.08 ic 19.18 ic	67.03 ic 67.32 ic			677.96 698.00					764.07 784.49
6.88	1,477,177	647.40		19.16 ic	67.60 ic			718.22					805.10
6.93	1,514,244	647.45		19.36 ic	67.89 ic			738.64					825.89
6.98	1,532,777	648.00		20.37 ic	70.95 ic			975.53					1066.84
					1								

		Proposed (Juttall Table		
Study	Point	Q ₂ (CFS)	Q ₁₀ (CFS)	Q ₂₅ (CFS)	Q ₁₀₀ (CFS)
	Existing	8.23	21.91	24.8	27.77
SP-1	Proposed	7.97	14.02	15.24	16.74
	Change	-0.26	-7.89	-9.56	-11.03
	Existing	46.01	88.35	171.22	335.96
SP-2	Proposed	43.66	77.26	159.51	332.96
	Change	-2.35	-11.09	-11.71	-3
	Existing	26.56	52.99	72.83	109.24
SP-3	Proposed	26.56	52.99	72.83	109.24
	Change	0	0	0	0
	Existing	83.76	167.67	230.65	346.38
SP-4	Proposed	82.41	164.97	226.95	340.82
	Change	-1.35	-2.7	-3.7	-5.56

6/14/2021



Elevation: 653.84 ft**

Precipitation Frequency Data Server

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite NOAA, National Weather Service, Silver Spring, Maryland PF tabular | PF graphical | Maps & aerials

Duration				Average i	recurrence	interval (y	ears)			
	1	2	5	10	25	50	100	200	500	10
5-min	0.438 (0.331-0.578)	0.524 (0.396-0.677)	0.658 (0.499-0.861)	0.775 (0.582-1.03)	0.946 (0.690-1.30)	1.09 (0.770-1.54)	1.23 (0.851-1.79)	1.39 (0.933-2.07)	1.60 (1.04-2.47)	1. (1.12
10-min	0.696 (0.527-0.919)	0.835 (0.631-1.08)	1.05 (0.796-1.37)	1.24 (0.929-1.65)	1.51 (1.11-2.09)	1.74 (1.24-2.46)	1.98 (1.36-2.87)	2.22 (1.49-3.29)	2.54 (1.65-3.90)	2. (1.76
15-min	0.880 (0.666-1.16)	1.05 (0.795-1.36)	1.32 (0.999-1.72)	1.55 (1.16-2.06)	1.89 (1.38-2.60)	2.16 (1.53-3.06)	2.45 (1.69-3.56)	2.76 (1.85-4.10)	3.18 (2.06-4.89)	3. (2.22
30-min	1.25 (0.945-1.65)	1.49 (1.12-1.92)	1.85 (1.41-2.43)	2.17 (1.63-2.90)	2.64 (1.92-3.62)	3.01 (2.13-4.26)	3.41 (2.35-4.95)	3.84 (2.58-5.72)	4.45 (2.89-6.86)	4. (3.13
60-min	1.62 (1.23-2.14)	1.94 (1.47-2.51)	2.44 (1.85-3.19)	2.87 (2.16-3.83)	3.51 (2.55-4.82)	4.02 (2.85-5.68)	4.57 (3.16-6.63)	5.19 (3.49-7.72)	6.08 (3.95-9.37)	6. (4.31
2-hr	1.94 (1.48-2.55)	2.39 (1.80-3.04)	3.06 (2.33-3.98)	3.67 (2.77-4.87)	4.58 (3.36-6.28)	5.35 (3.81-7.54)	6.21 (4.30-8.95)	7.17 (4.83-10.6)	8.58 (5.59-13.2)	9. (6.20
3-hr	2.11 (1.61-2.77)	2.65 (1.99-3.34)	3.44 (2.62-4.45)	4.17 (3.15-5.52)	5.29 (3.88-7.23)	6.24 (4.46-8.78)	7.32 (5.08-10.5)	8.55 (5.77-12.6)	10.4 (6.76-15.8)	11 (7.56
6-hr	2.42 (1.85-3.17)	3.11 (2.33-3.87)	4.08 (3.12-5.26)	5.01 (3.80-6.61)	6.44 (4.75-8.78)	7.68 (5.52-10.8)	9.11 (6.34-13.0)	10.7 (7.27-15.7)	13.2 (8.62-20.0)	15 (9.73
12-hr	2.77 (2.13-3.60)	3.57 (2.68-4.42)	4.70 (3.61-6.03)	5.79 (4.41-7.60)	7.46 (5.52-10.1)	8.91 (6.42-12.4)	10.6 (7.40-15.1)	12.5 (8.51-18.3)	15.4 (10.2-23.4)	17 (11.5
24-hr	3.15 (2.43-4.08)	4.05 (3.06-5.01)	5.34 (4.12-6.84)	6.58 (5.03-8.60)	8.45 (6.28-11.4)	10.1 (7.27-14.0)	11.9 (8.37-16.9)	14.1 (9.63-20.5)	17.4 (11.5-26.2)	(13.0
2-day	3.58 (2.78-4.63)	4.58 (3.50-5.68)	6.04 (4.69-7.71)	7.40 (5.68-9.64)	9.44 (7.02-12.7)	11.1 (8.07-15.4)	13.1 (9.24-18.5)	15.4 (10.6-22.3)	19.0 (12.6-28.4)	(14.2
3-day	3.89 (3.02-5.01)	4.95 (3.80-6.14)	6.52 (5.07-8.30)	7.95 (6.12-10.3)	10.1 (7.51-13.5)	11.8 (8.59-16.3)	13.8 (9.78-19.5)	16.2 (11.1-23.4)	19.8 (13.2-29.6)	(14.8
4-day	4.14 (3.22-5.32)	5.24 (4.04-6.51)	6.89 (5.37-8.76)	8,38 (6.46-10.9)	10.6 (7.90-14.1)	12.4 (9.01-17.0)	14.4 (10.2-20.2)	16.8 (11.6-24.2)	20.4 (13.6-30.3)	23 (15.2
7-day	4.73 (3.69-6.06)	5.92 (4.59-7.37)	7.72 (6.04-9.79)	9.33 (7.21-12.0)	11.7 (8.75-15.5)	13.6 (9.92-18.6)	15.7 (11.1-21.9)	18.1 (12.5-25.8)	21.5 (14.3-31.8)	(15.8
10-day	5.24 (4.10-6.70)	6.48 (5.06-8.09)	8.40 (6.60-10.7)	10.1 (7.83-13.0)	12.5 (9.42-16.6)	14.5 (10.6-19.8)	16.7 (11.8-23.2)	19.0 (13.1-27.1)	22.3 (14.9-32.8)	24 (16.2
20-day	6.89 (5.41-8.77)	8.25 (6.54-10.4)	10.5 (8.26-13.2)	12.3 (9.57-15.8)	14.8 (11.2-19.6)	16.8 (12.3-22.7)	18.8 (13.4-26.1)	21.0 (14.6-29.8)	24.0 (16.1-35.2)	26 (17.3
30-day	8.26 (6.50-10.5)	9.70 (7.75-12.3)	12.1 (9.64-15.4)	14.1 (11.0-18.0)	16.7 (12.6-21.9)	18.7 (13.7-25.1)	20.6 (14.7-28.4)	22.7 (15.8-32.1)	25.5 (17.2-37.3)	27 (18.2
Jo-uay	10.1	11.7	14.5	16.7 (13.0-21.3)	19.5 (14.7-25.5)	21.5 (15.8-28.9)	23.5 (16.8-32.3)	25.5 (17.8-36.0)	28.2 (19.0-41.0)	(19.8
45-day	(8.00-12.8)	(9.43-14.9)	(11.6-18.3)	(10.0 £1.0)						

PF graphical

https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_printpage.html?lat=30.4180&lon=-97.5965&data=depth&units=english&series=pds

Please refer to NOAA Atlas 14 document for more information.

CALCULATIONS METHODOLOGY:

HYDROLOGIC AND DETENTION CALCULATIONS WERE PERFORMED WITHIN THE HYDRAFLOW HYDROGRAPHS EXTENSION FOR CIVIL 3D PROGRAM. DRAINAGE AREAS ARE DELINEATED AS SHOWN ON SHEETS 5 & 6. A COMPOUND DETENTION POND IS PRESENT AT THE SOUTH SIDE OF THE SITE.

IN BOTH THE EXISTING AND PROPOSED CONDITIONS, DURING STORM EVENTS OF 2YR RETURN PERIOD AND SMALLER, THE POND FUNCTIONS AS TWO SEPARATE PONDS FOR SP-1 AND SP-2. THE WATER SURFACE ON EACH SIDE OF THE EXISTING HIGH POINT IN THE POND DOES NOT GET HIGH ENOUGH TO OVERTOP AND COMBINE THE

DURING STORM EVENTS GREATER THAN 2YR RETURN PERIODS, THE WATER SURFACE OF THE POND DOES OVERTOP THE HIGH POINT AND THE STORAGE IN THE TWO PONDS IS COMBINED.

IN THE HYDROGRAPH SUMMARY REPORTS TO THE LEFT, A SERIES OF HYDROGRAPHS RUN TO DETERMINE THE FLOWS AT EACH OUTFALL LOCATION CAN BE FOUND.

- HYDROGRAPHS 1 THROUGH 5 SHOW THE EXISTING FLOWS FOR THE DRAINAGE AREAS SHOWN ON SHEET 5.
- HYDROGRAPHS 7 & 8 REPRESENT SUB-AREAS INSIDE OF EX-1 THAT FLOW TO THE RESPECTIVE SP-1 SIDE OF THE POND OR THE SP-2 SIDE OF THE POND FOR LESSER STORM EVENTS.
- HYDROGRAPH 10 IS THE COMBINED EXISTING FLOW TO THE POND FOR LARGER STORM EVENTS. HYDROGRAPH 11 IS THE COMBINED EXISTING OUTFALL OF SP-1 AND SP-2 FROM THE POND. THIS HYDROGRAPH IS USED TO DETERMINE THE PEAK WATER SURFACE ELEVATION FOR THE LARGER STORM
- EVENTS. THIS ELEVATION IS THEN INTERPOLATED USING THE RATING CURVE FOR EACH OUTFALL STRUCTURE TO DETERMINE THE EXISTING OUTFALL TO SP-1 AND SP-2.

 • HYDROGRAPH 12 IS THE EXISTING OUTFALL FROM THE SP-1 SIDE OF THE POND FOR THE 2 YEAR STORM
- HYDROGRAPH 13 IS THE COMBINED EXISTING FLOW INTO THE SP-2 SIDE OF THE POND FOR THE 2 YEAR
- STORM EVENT. HYDROGRAPH 14 IS THE EXISTING OUTFALL FROM THE SP-2 SIDE OF THE POND FOR THE 2 YEAR STORM
- HYDROGRAPHS 16 & 17 ARE THE PROPOSED AREAS FOR DAS 4 AND 5 THAT HAVE CHANGED IN THE PROPOSED CONDITIONS AS SHOWN ON SHEET 6.
- HYDROGRAPH 19 IS THE COMBINED PROPOSED FLOW TO THE POND FOR LARGER STORM EVENTS.
- HYDROGRAPH 20 IS THE COMBINED PROPOSED OUTFALL OF SP-1 AND SP-2 FROM THE POND. THIS HYDROGRAPH IS USED TO DETERMINE THE PEAK WATER SURFACE ELEVATION FOR THE LARGER STORM EVENTS. THIS ELEVATION IS THEN INTERPOLATED USING THE RATING CURVE FOR EACH OUTFALL STRUCTURE TO DETERMINE THE PROPOSED OUTFALL TO SP-1 AND SP-2.
- HYDROGRAPH 21 IS THE PROPOSED OUTFALL FROM THE SP-1 SIDE OF THE POND FOR THE 2 YEAR STORM HYDROGRAPH 22 IS THE COMBINED PROPOSED FLOW INTO THE SP-2 SIDE OF THE POND FOR THE 2 YEAR
- HYDROGRAPH 23 IS THE PROPOSED OUTFALL FROM THE SP-2 SIDE OF THE POND FOR THE 2 YEAR STORM

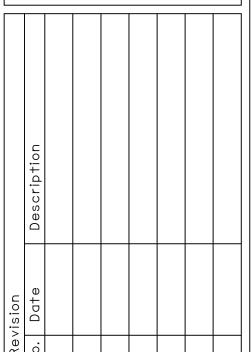
DETENTION NOTES:

- 1. INCORPORATION OF ATLAS-14 VALUES AND THE EXTENSION OF HELIOS WAY RESULTED IN MINOR INCREASES IN FLOW INTO THE DETENTION POND.
- 2. TO REDUCE PROPOSED DISCHARGE TO MATCH EXISTING FLOWS, THE FOLLOWING MODIFICATIONS ARE REQUIRED AT BOTH THE SP-1 AND SP-2 OUTFALL LOCATIONS:
- SP-1: ADD A CUSTOM FABRICATED 18" Ø RESTRICTOR PLATE BOLTED TO THE INSIDE OF THE EXISTING 24" RCP PIPE WITH CONCRETE ANCHORS.
- SP-2: ADD CUSTOM FABRICATED 23" Ø RESTRICTOR PLATE BOLTED TO THE INSIDE OF EACH OF THE (2) EXISTING 24" RCP PIPES WITH CONCRETE ANCHORS; BOLT A 3"x3" ANGLE IRON TO THE TOP OF THE WEIR TO ADD 3" TO THE WEIR CREST ELEVATION.
- 3. WITH PROPOSED MODIFICATIONS DESCRIBED ABOVE:
- MAX. 100-YR WSE = 646.14
- TOP OF POND = 647.50
- FREEBOARD = 1.36'

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Sheet Title

DRAINAGE

CALCULATIONS

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